

ETHELWYNN TREWAVAS

British Museum (Natural History)

A NEW SPECIES OF *IRVINEIA*,
AN AFRICAN GENUS OF SCHILBEID FISHES

INTRODUCTION AND ACKNOWLEDGMENTS

During a visit to the Genoa Museum in October 1955 I took the opportunity, kindly afforded me by Prof. E. Tortonese and Dr. Del-fina Guiglia, of examining examples of *Eutropius* from the rivers of So-maliland, for comparison with the *Eutropius* of Kenya. To my surprise I found among them five specimens showing the high numbers of pectoral and pelvic rays characteristic of the genus *Irvineia*, so far known only from a single West African species, *I. voltae* Trewavas, 1943. Further examination revealed that, like *I. voltae*, this species is characterised by a posterior caecum of the swim-bladder, extending backwards on one side of the tail to the posterior end of the anal fin, dextral in three specimens, sinistral in two. Moreover, as in *I. voltae*, the average number of branchiostegal rays is higher than in *Eutropius*, and the sixth soft dorsal ray is a double one.

Their combination in another species confirms the importance of the characters on which the generic distinctness of *Irvineia* was based. In addition to the *Schilbeidae* examined at the time when the genus was proposed, I have recently counted the pelvic rays in over 100 specimens of *Schilbe mystus* and *Eutropius depressirostris*, and find them uniformly six (one simple and five branched).

I have pleasure in thanking Prof. Tortonese and Dr. Guiglia for the kindness with which they gave me every facility for studying the collections in the Genoa Museum. I am also very grateful to Dr. E.G. Silas, who followed a visit to the British Museum in 1956 with one to Genoa, and there examined a sixth specimen of *Irvineia* and put his notes and sketches at my disposal for inclusion in this paper.

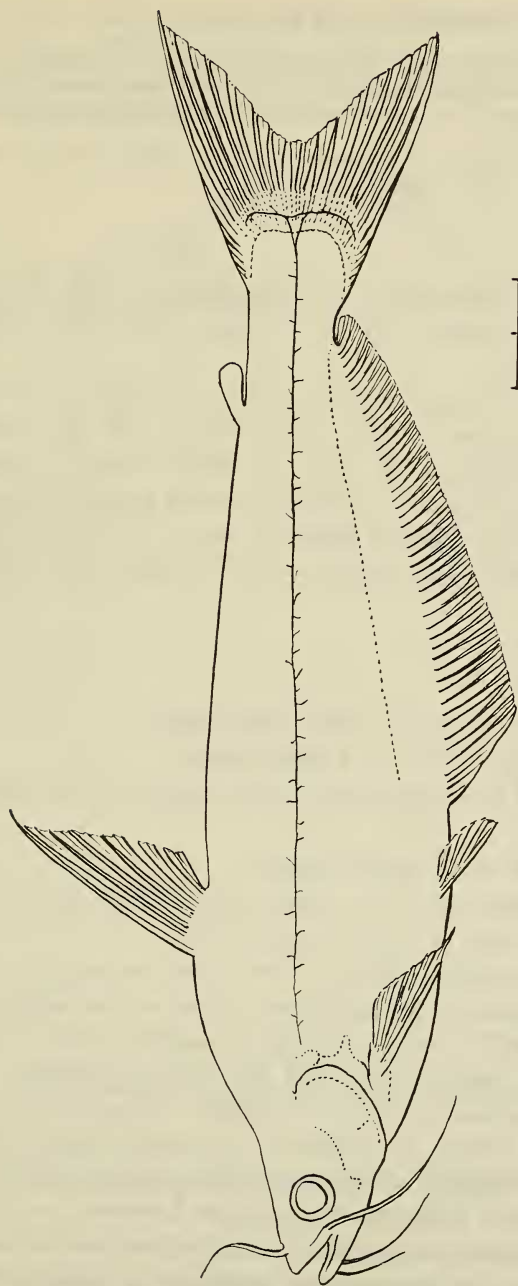


Fig. 1 - *Irvineia orientalis*, holotype, S.L. 193 mm.

Irvineia orientalis sp. n.

Eutropius depressirostris (nec Peters); Vinciguerra, 1895: 34 (Bardera, R. Ganana; S.L. 149 mm, listed below as a paratype); id., 1896: 27 (near junction of R. Ueb with R. Ganana = Juba; total length 720 mm); id. 1922: 385 (Uebi Scebeli; S.L. 502 mm, a paratype listed below).

E. depressirostris (part.); Vinciguerra, 1927: 252 (three, left arm of delta of R. Juba (Giuba), S.L. 117-144 mm).

STUDY MATERIAL.

Holotype, ♂, 193 mm S.L., Villaggio Duca degli Abruzzi, Uebi Scebeli (Shebeli) system; coll. P. Andruzzi, 1923. Mus. Genova, C.E. 39551.

Paratypes: 149 mm S.L., R. Ganana at Bardera; coll. V. Bottego, 20.viii.1893. Mus. Genova C.E. 39578. Three, 144, 126 and 117 mm S.L., left arm of delta of R. Giuba at Momba; coll. S. Patrizi, Jan.-Feb. 1923; Mus. Genova, C.E. 39562 [The 144 mm specimen is now in the British Museum (Natural History), reg. n. 1955.12.14.2]. 502 mm S.L., Uebi Scebeli (lower reaches); coll. V. Casale, 1911; Mus. Genova C.E. 17619.

DESCRIPTION.

D I 6; last ray double, both parts forked.

A 56-60; the first 3 or 4 unbranched.

P I 12-14; in two specimens there are 12 on the right side, 14 on the left.

V 8-10, usually 9, the first simple.

Branchiostegal rays 11 on each side in three specimens, 10 left and 11 right in two, 11 left 12 right in one.

Gill-rakers slender, 18-20 on lower part of anterior arch.

Caudal caecum of swim-bladder dextral in the holotype and two paratypes, sinistral in two, extending to posterior end of base of anal fin between the haemal spines and the ventral muscles.

The proportions are shown in Table 1, where they are compared with those of *I. voltae*. In addition, the pectoral spine is 13.5-15.5% of the standard length, the rigid part of the dorsal spine 13.5-16.5%. (These spines were broken in the types of *I. voltae*).

The dorsal profile rises rather abruptly from the flat head, forming a convexity between the occiput and the dorsal fin, progressively steeper and more convex from smaller to larger specimens. The lower jaw

projects slightly. The eyes are perfectly lateral in the type and smaller specimens, but a little more dorsal in the 502 mm. fish. The posterior nostrils are nearer together than the anterior, the distance between them 32-36% of the length of head.

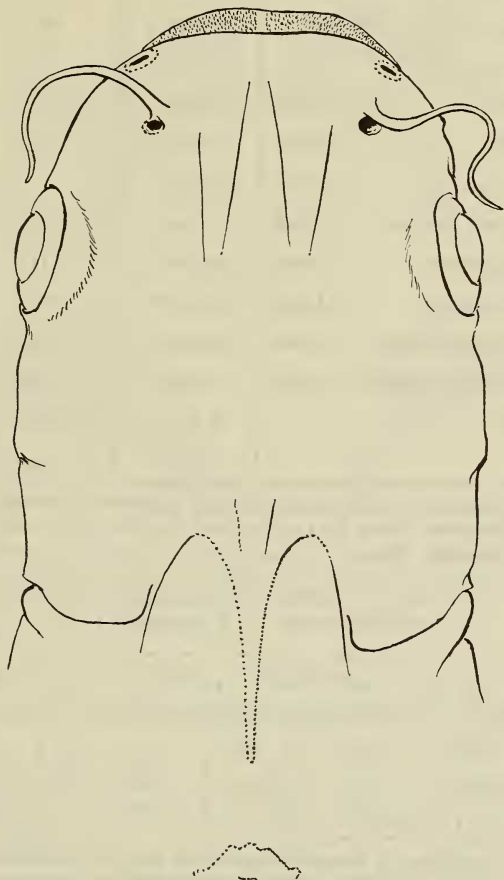


Fig. 2 - *Irvineia orientalis*; dorsal view of head of paratype of S.L. 144 mm.

The teeth are small, more comparable in size with those of *Eutropius niloticus* than with the larger teeth of *E. depressirostris*, with points directed backwards. The vomerine and palatine bands, wider than the premaxillary, are distinct from each other but contiguous, and the palatine band may be divided into two groups.

	<i>I. orientalis</i>		<i>I. voltae</i>
Number of specimens	5	1	6
Standard lengths (mm)	117-193	502	132-178
Depth at origin of anal: % S.L.	23-24.5	25	19-21
Length of head % S.L.	20-21	23	19.5-22
Diameter of eye % Head	17.5-28	11.5	23-25
Interocular width % Head	51-58	60.5	37-45.5
Length of lower jaw % Head	57.5-64	—	69-77
Length of occipital process % Head	38-42	39	30
Length of nasal barbel % Head	52.5-67	31	14-20
Length of max. barbel % Head	81.5-108	65	50-68
Length of post. mand. barbel % Head	46.5-64	37.5	15-22.5
Length of ant. mand. barbel % Head	28-44	19.5	0-14
Branched D rays	6 (+1)	6 (+1)	6 (+1)
Total A rays	56-60	59	59-65

Table 1 — Comparison of proportions and numbers of dorsal and anal rays in the two species of *Irvineia*. Those for the 502 mm. specimen of *I. orientalis* are from the measurements of Dr. E.G. Silas.

	Branchiostegals			P branched rays			V rays (total)		
	10	11	12	12	13	14	8	9	10
<i>I. orientalis</i>	2	8	1	2	6	4	1	10	1
<i>I. voltae</i>	3	8	0	1	10	1	0	12	0

Table 2 — Numbers of branchiostegal rays, pectoral branched rays and pelvic rays in the two species of *Irvineia*; counts of right and left sides are given where preservation permitted, and the frequencies are thus fins or series of branchiostegal rays, not fishes.

The occipital process is separated by a short gap, $1/4$ to nearly $1/2$ the length of the process, from the bony element before the dorsal fin.

ALLOMETRY.

Although Dr. SILAS's opinion was that the large specimen examined by him was conspecific with those seen by me, he drew attention

to certain differences between it and the smaller fishes. Since it is more than $2\frac{1}{2}$ times as long as the holotype it is worth while considering what differences may be explained as the continuation of an allometric trend detectable in the smaller specimens.

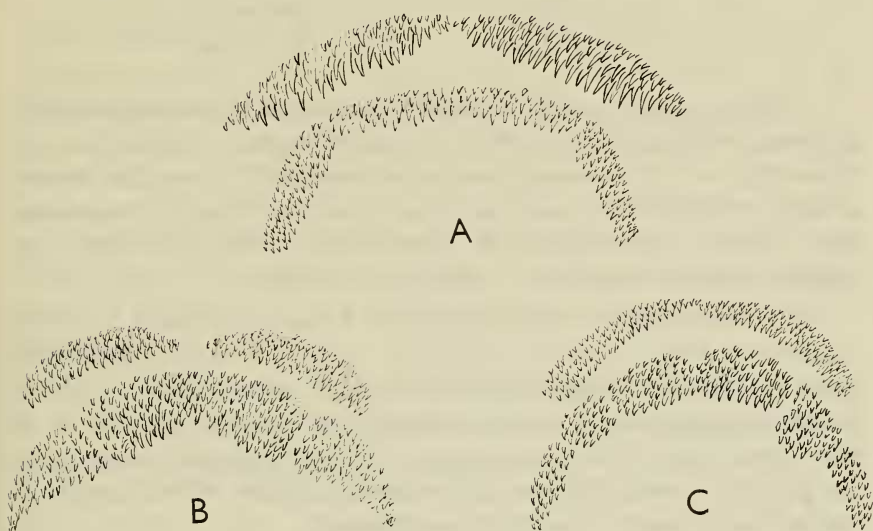


Fig. 3 - Premaxillary, vomerine and palatine teeth of: A. *Eutropius depressirostris*, a specimen of S.L. 170 mm from R. Tana; B. *Irvineia orientalis*, holotype; C. *I. orientalis*, a paratype of S.L. 144 mm.

1. The shape of the nape. In *Schilbeidae* there is a general trend within a species for the nape to steepen with growth, but JOHNELS has shown (1954, p. 393) that in *Schilbe* the shape of nape (as well as the degree of pigmentation) may be correlated with the condition of the fish. Thus both allometry and nutrition may sufficiently explain the steep profile of this giant.

2. The teeth are relatively smaller in the large fish. Dr. SILAS gives 1 mm as the length of a tooth, whereas in a specimen of 149 mm one of the longest teeth measures 0.5 mm. In *E. depressirostris* I find that although the teeth increase in size with the fish, they do so less rapidly.

3. The shorter barbels. In *Schilbeidae* in general (and in other catfishes) the barbels become relatively shorter with length of fish. (It was realization of this trend that led BOULENGER to recognize *E.*

longifilis Steindachner as a juvenile *E. depressirostris*). I have measured the maxillary barbel in four specimens of *I. orientalis* as follows:

S.L. 117 mm	Barbel 25.5 mm
» 126 mm	» 25 mm
» 144 mm	» 24.5 mm
» 193 mm	» 35 mm

The regression equation calculated from these by the method given by SIMPSON & ROE (1939 p. 266) is: Length of barbel = $0.135 \text{ S.L.} + 8$. Where S.L. = 502 mm this gives a barbel length of 75.7 mm. Dr. SILAS's measurement is 76 mm, and thus closely fits the allometric trend exhibited in the smaller specimens. VINCIGUERRA (1896) described even relatively shorter barbels in a still larger specimen.

4. The relatively short gill-rakers. I have not made a careful examination of the stomach-contents, but in one of the smaller specimens insect remains had escaped from the damaged stomach and in another similar fragments could be seen through the stomach wall. If, as in many other fishes, the diet changes with age to include larger prey, the gill-rakers would be less important functionally. If this could influence their growth, it would be as observed.

5. The smaller eye. This allometry is usual in fishes.

6. The somewhat more dorsal position of the eyes. A drawing by Dr. SILAS does not suggest that the difference in position is more than might be explained by the greater relative growth of the jaw-muscles. The eyeball is remote from any firm bony structure and its position could easily be affected by the muscles.

DISTRIBUTION.

Known only from R. Juba (Giuba, Ganana) from its junction with R. Ueb to the mouth and from R. Webi Shebeli, which joins the Juba near its mouth.

I have examined numerous samples of *Eutropius depressirostris* from the eastward-flowing rivers farther south, from the Tana to the Limpopo, and there were no specimens of *Irvineia* among them. The *E. depressirostris* listed without comment by GÜNTHER (1896) from Webi Shebeli seems never to have been preserved in the British Museum, and may have belonged to either species.

AFFINITIES.

This species has been confused with *Eutropius depressirostris*, which is found in the same waters and resembles it in form, colour, projecting lower jaw, anterior nostrils more widely separated than posterior and in number of anal rays. It is not, however, closely related to that species, differing from it not only in the striking generic characters of numbers of pelvic rays and caudal caecum of swim-bladder, but also in the smaller teeth, more numerous gill-rakers and the shape of the ethmoid region. In the last feature both species of *Irvineia* resemble rather species of *Eutropius* with ventral mouth than *E. depressirostris* although in them the anterior nostrils are nearer together than the posterior. In identifying specimens of *Irvineia* as *E. depressirostris*, VINCIGUERRA was troubled by the greater length of the maxillary barbel, which in the latter is of approximately the same length as the posterior mandibular.

In the specimens of *I. orientalis* examined the maxillary barbel is 1.5-1.75 times the length of the posterior mandibular. In fourteen specimens of *E. depressirostris* of size range (118-197 mm) comparable to that of the five smaller *I. orientalis* the maxillary barbel is 48.5-72.0% of the length of head, the posterior mandibular 45.5-74.0% (compare table 1) and the ratio max./p. mand. is 0.8-1.2 (1.5 in one).

In the descriptions of «*E. depressirostris*» from the Webi Shebeli-Juba system, one may judge from authors' descriptions of the barbels which species was in question. Thus VINCIGUERRA in 1895, 1896 and 1922 had on each occasion one specimen of *I. orientalis*; in 1897 he noted that the barbel lengths, at least in the largest of his six specimens, agree better with PETERS' definition of *E. depressirostris*, which species they all prove to be; in 1927 he had thirteen specimens and his description of the barbels was evidently made from the three largest, which are *I. orientalis*; the other ten, much smaller, whose barbels he probably did not measure, are *E. depressirostris* (examined by me in 1955). Dr. D. GUIGLIA's fifteen young (1922, p. 44), in which the posterior mandibular barbel is described as longer than or equal to the maxillary, prove to be true *E. depressirostris*; and those described by SENNA (1915, p. 180) from Bardera are probably the same.

The closest relationship of *I. orientalis* is, of course, with its West African congener *I. voltae*, from which it is well distinguished by longer barbels, wider interocular space and fewer anal rays (tables 1 and 2).

In all the known specimens of *I. voltae* the caudal caecum of the swim-bladder is dextral, but they are too few to establish that this is fixed for the species.

REFERENCES

- GUIGLIA D. - 1935 - Spedizione zoologica del Marchese Saverio Patrizi nel Basso Giuba e nell'Oltregiuba, Giugno-Agosto 1934. Pesci. - *Ann. Mus. St. Nat. Genova*, LVIII: 27-49.
- GÜNTHER A. - 1896 - Report on a collection of fishes made by Dr. A. Donaldson Smith during his expedition to Lake Rudolf. *Proc. zool. Soc. Lond.* 217-224, pl. ix.
- JOHNELS A.G. - 1954 - Notes on fishes from the Gambia River. *Ark. Zool. Stockholm* (2) 6: 327-411.
- SENNA A. - 1915 - Pesci raccolti nella Somalia meridionale dai dottori Stefanini e Paoli. *Monit. Zool. Ital.* 26: 176-182.
- SIMPSON G.G. & ROE A. - 1939 - *Quantitative Zoology* (New York, Mc Graw Hill).
- TREWAVAS E. - 1943 - The schilbeid fishes of the Gold Coast. *Proc. zool. Soc. Lond.* 113 B: 164-171.
- TREWAVAS E. & IRVINE F.R. - 1947 - Freshwater fishes in: *The fishes and fisheries of the Gold Coast*. (London, Crown Agents) (*Irvineia voltae*, p. 252, fig. 167).
- VINCIGUERRA D. - 1895 - Esplorazione del Giuba e dei suoi affluenti compiuta dal Cap. V. Bottego durante gli anni 1892-93. Pesci. *Ann. Mus. Storia Nat. Genova*, XXXV: 19-60, pl. v.
- — 1896 - Pesci raccolti da don Eugenio dei Principi Ruspoli durante l'ultimo suo viaggio nelle regioni dei Somali e dei Galla. *Ann. Mus. Storia Nat. Genova*, XXXVII: 24-31.
- — 1897 - Pesci raccolti dal Cap. V. Bottego durante la sua seconda spedizione nelle regioni dei Somali e dei Galla. *Ann. Mus. Storia Nat. Genova*, XXXVII: 343-364.
- — 1922 - Contribuzione alla conoscenza della fauna ittiologica dello Uebi Scebeli. *Ann. Mus. Storia Nat. Genova*, XLIX: 372-385, pl. v.
- — 1927 - Enumerazione di alcune specie di pesci della Somalia Italiana raccolte dal Marchese Saverio Patrizi. *Ann. Mus. Storia Nat. Genova*, LII: 246-259.

RIASSUNTO

Una nuova specie di Pesce Siluriforme (*Irvineia orientalis*, fam. *Schilbeidae*) viene descritta in base ad alcuni esemplari conservati nel Museo di Genova e provenienti dalla Somalia (Uebi Scebeli, Ganana, Giuba). Essa era stata confusa con *Eutropius depressirostris*, dal quale differisce fra l'altro per il maggior numero di raggi nelle pinne ventrali e la vescica natatoria prolungata in un cieco caudale. Da *I. voltae* dell'Africa occidentale (unica specie congenere finora nota) si distingue per i barbigli più lunghi, lo spazio interoculare più largo e i raggi della pinna anale meno numerosi.